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28. (Amended) A pneumatic tire having a body ply which comprises an elastomer sheet and two parallel rows of reinforcement cords embedded therein by extruding an elastomeric material between and around the cords in the plurality of rows; each row [comprising] having between about 50 to about 600 cords; each cord having a diameter d of about 0.3 mm to about 2.0 mm; adjacent cords in a first of the plurality of rows being spaced a distance d_{a-a} and wherein adjacent cords in a second of the plurality of rows are spaced a distance d_{b-b} and wherein these distances are equal and uniform and about 0.1 mm to about 3.8 mm;

the reinforcement cords in one row being transversely staggered relative to the reinforcement cords in an adjacent row.

REMARKS

By the present amendment, claims 3-5, 8, 26 and 28 have been amended to remove indefiniteness issues. Also, claims 21 and 24 have been amended, and claims 26-28 have been additionally amended, to recite that the reinforcement cords are embedded in the elastomeric sheet by extruding an elastomeric material between and around the cords in the plurality of rows. Upon entry of this amendment, claims 2-18, 21-26 and 28 will be pending in the application.¹ A clean listing of the amended claims is attached.

Claim Rejections - 35 U.S.C. § 112

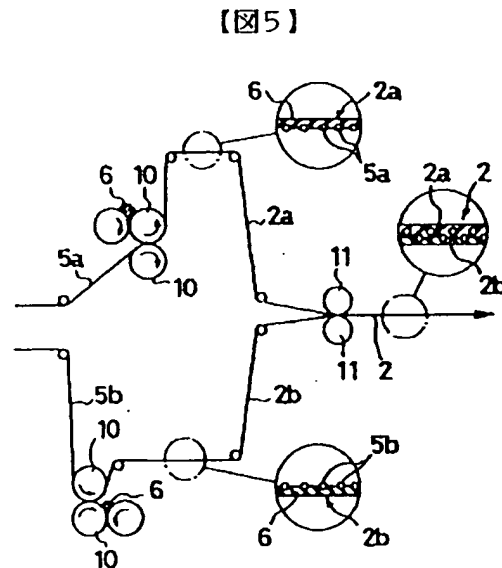
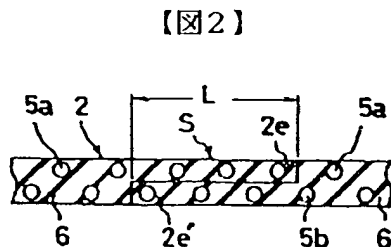
Claims 3-5, 8, 26 and 28 have been amended as suggested by the Examiner to remove any indefiniteness issues.

1. Method claims 11-18 depend from claim 21, whereby rejoinder of these claims upon allowance of claim 21 is again respectfully requested.

Claim Rejections - 35 U.S.C. § 102/ §103

Claims 2-10, 21-26 and 28 have been rejected as being anticipated by Japanese Patent Application No. 5-294104 and claims 7-10, 26 and 28 have been rejected as being obvious over this reference.

The Japanese reference discloses a carcass layer 2 comprising a first row of cords 5a and a second row of cords 5b. (See Figure 2, below.) According to the Examiner's translation, this "layer" is actually two "half layers" 2a and 2b joined together. Specifically, a calendering roll 10 covers the upper side of the cords 5a with rubber 6 to form the half layer 2a and another calendering roll 10 covers the lower side of the cords 5b with rubber 6 to form the half layer 2b. The half layers 2a and 2b are then "laminated" together with a calendering roll 11. (See Figure 5, below.)



Accordingly, the Japanese Reference does not show or suggest a body ply comprising an elastomeric sheet and a plurality of rows of reinforcement cords embedded in the elastomeric sheet. Instead, this reference specifically teaches two elastomeric sheets each having one row of reinforcement cords.² Moreover,

2. As was explained in the background portion of applicant's specification "[t]ypically, body ply material is manufactured by calendering a single row of

independent claims 21, 24, 26 and 28 now specify that embedding of the cords is accomplished by extruding an elastomeric material between and around the cords in the plurality of rows.³

Conclusion

In view of the foregoing, the present application is believed to be in a condition for allowance and an early indication to that effect is earnestly solicited.

Should a petition for an Extension of Time be necessary for the timely reply to the outstanding Office Action (or if such a petition has been made and an additional extension is necessary), petition is hereby made and the Commissioner is authorized to charge any fees (including additional claim fees) to Deposit Account No. 18-0988, Order No. FIREP9905052US.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, P.L.L.

By Cynthia S. Murphy
Cynthia S. Murphy
Reg. No. 33,430
1621 Euclid Avenue
Nineteenth Floor
Cleveland, Ohio 44115
(216) 621-1113

reinforcement cords in a rubber material" and "[w]hen a radial tire construction requires a double layer of reinforcement cords in the tire's inner carcass, two separate body plies are commonly used to meet this requirement." The Japanese reference appears to reflect this "typical" approach as to the incorporation of a plurality of rows of reinforcement cords into a single body ply.

3. It is respectfully submitted that calender embedding and extrusion embedding result in different respective structural outcomes in the body ply which would be ascertainable by inspection of the tire.

CERTIFICATE OF MAILING (37 CFR 1.8a)

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231.

Date: January 14, 2003

Marian E. Vasquez
Marian E. Vasquez

APPENDIX

SVB C17
B 21. A green tire incorporating a body ply comprising an elastomeric sheet and a plurality of rows of reinforcement cords embedded therein by extruding an elastomeric material between and around the cords in the plurality of rows, the body ply having edges forming an axially extending seam, wherein each of the reinforcement cords has a diameter d , wherein adjacent cords in a first of the plurality of rows are spaced a distance d_{a-a} and wherein adjacent cords in a second of the plurality of rows are spaced a distance d_{b-b} and wherein these distances are equal and uniform.

2. A green tire as set forth in claim 21, wherein the reinforcement cords in one row are transversely staggered relative to the reinforcement cords in an adjacent row.

SVB C17
B2 3. A green tire as set forth in claim 2, wherein the plurality of rows are two parallel rows of reinforcement cords.

4. A green tire as set forth in claim 21, wherein the plurality of rows are two parallel rows of reinforcement cords.

5. A green tire as set forth in claim 21, wherein the elastomeric sheet is made of rubber.

6. A green tire as set forth in claim 21, wherein the sheet has a thickness of about 0.5 mm to about 2.0 mm.

7. A green tire as set forth in claim 6, wherein the sheet has a width of about 150 mm to about 250 mm.

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C7 8. A green tire as set forth in claim 21, wherein each row comprises between about 50 to about 600 cords.

9. A green tire as set forth in claim 8, wherein the cords each have a diameter of about 0.3 mm to about 2.0 mm.

10. A green tire as set forth in claim 9, wherein the reinforcement cords in each row are spaced from adjacent reinforcement cords in the same row a distance of about 0.1 mm to about 3.8 mm.

11. A method of making the body ply for the green tire of claim 21, comprising the steps of:

introducing the reinforcement cords into a die assembly; and
extruding rubber into a cavity of the die assembly so that rubber is forced around and between the reinforcement cords.

12. A method as set forth in claim 11, wherein an insert is positioned upstream of the die cavity and wherein the reinforcement cords pass through the insert.

13. A method as set forth in claim 12, wherein the insert comprises a body portion with a plurality of passages extending from an entrance end to an exit end and wherein the passages are arranged in a plurality of rows corresponding to the desired placement and spacing of the reinforcement cords.

14. A method as set forth in claim 13, wherein the passages are arranged in two parallel rows.

15. A method as set forth in claim 14, wherein the openings in one row are transversely staggered relative to the openings in the other row.

16. A method as set forth in claim 11, wherein said introducing and said extruding steps comprise:

replacing an insert in an existing machine with an insert having the passages corresponding to the arrangement of reinforcement cords in the elastomeric sheet;

passing the reinforcement cords through the replacement insert and into a die assembly of the existing machine; and

extruding rubber into a cavity of the die assembly so that rubber is forced around and between the reinforcement cords.

17. A method as set forth in claim 11, further comprising the step of cutting the body ply material to size to form the body ply.

18. A method of making the body ply for the green tire of claim 21, comprising the steps of:

replacing an insert in an existing machine used to make steel belts or single layer body ply material with an insert having the passages corresponding to the arrangement of reinforcement cords in the elastomeric sheet;

passing the reinforcement cords through the replacement insert and into a die assembly of the existing machine; and

extruding rubber into a cavity of the die assembly so that rubber is forced around and between the reinforcement cords.

22. A green tire as set forth in claim 21, wherein the body ply has sliced edges forming the axially extending seam.

23. A green tire as set forth in claim 21, wherein the reinforcement cords extend substantially parallel to the axis of the green tire.

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24. A tire incorporating a body ply comprising an elastomeric sheet and a plurality of rows of reinforcement cords embedded therein by extruding an elastomeric material between and around the cords in the plurality of rows, the body ply extending between beads and having lateral end portions turned respectively therearound, wherein each of the reinforcement cords has a diameter d , wherein adjacent cords in a first of the plurality of rows are spaced a distance d_{a-a} and wherein adjacent cords in a second of the plurality of rows are spaced a distance d_{b-b} and wherein these distances are equal and uniform.

25. A tire as set forth in claim 24, wherein the reinforcement cords extend substantially parallel to the axis of the tire.

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26. A pneumatic tire incorporating a body ply comprising an elastomeric sheet and two parallel rows of reinforcement cords embedded therein by extruding an elastomeric material between and around the cords in the plurality of rows;
each row having between about 50 to about 600 cords;
each cord having a diameter d of about 0.3 mm to about 2.0 mm;
adjacent cords in a first of the plurality of rows being spaced a distance d_{a-a} and wherein adjacent cords in a second of the plurality of rows are spaced a distance d_{b-b} and wherein these distances are equal and uniform and about 0.1 mm to about 3.8 mm.

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28. A pneumatic tire having a body ply which comprises an elastomer sheet and two parallel rows of reinforcement cords embedded therein by extruding an elastomeric material between and around the cords in the plurality of rows;
each row having between about 50 to about 600 cords;
each cord having a diameter d of about 0.3 mm to about 2.0 mm;
adjacent cords in a first of the plurality of rows being spaced a distance d_{a-a} and wherein adjacent cords in a second of the plurality of rows are spaced a distance d_{b-b}

and wherein these distances are equal and uniform and about 0.1 mm to about 3.8 mm;

the reinforcement cords in one row being transversely staggered relative to the reinforcement cords in an adjacent row.

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